To achieve the above object, there is provided a method of fabricating an apodized optical fiber grating using an ultraviolet light source which includes a means for outputting an ultraviolet light; a lens system for converging or emitting the light incident from the ultraviolet light source; an amplitude mask for selectively transmitting the ultraviolet layer incident from the lens system; and, an optical fiber for receiving the light transmitted via the amplitude mask.

A1

Please replace the paragraph beginning on page 4, line 13 with the following rewritten paragraph:

Accordingly, the method according to the present invention includes the following steps of: a first step of setting the cycle of the optical fiber grating formed on the optical fiber and the width of each stripe pattern; a second step of setting a longitudinal ratio, which is a ratio of the distance between the converging (or emitting point) of the lens system and the amplitude mask, to the distance between the converging (or emitting point) of the lens system and the optical fiber; a third step of setting the cycle of the amplitude mask so as to unify a transverse ratio, which is a ratio of the cycle of the amplitude

A2

mask to the cycle of the optical fiber grating, with the longitudinal ratio set in the second step; and, a fourth step of setting a thickness of the amplitude mask so as to match the pattern of the optical fiber grating set in the first step with the pattern of an optical distribution on the injecting surface of the mask.

Cont'd A2

Please replace the paragraph beginning on page 6, line 3 with the following rewritten paragraph:

A3

Fig. 6 is a side elevational view illustrating the process of adjusting a converging or emitting point of the lens system as shown in Fig. 3;

Please replace the paragraph beginning on page 7, line 8 with the following rewritten paragraph:

A4

Fig. 3 is a diagram illustrating the method of fabricating an apodized optical fiber grating using an amplitude mask according to the preferred embodiment of the present invention. Referring to Fig. 3, an ultraviolet source 31 illuminates light to be applied to the lens system 32. The ultraviolet light source 31 includes an excimer laser. The lens system 32 includes a plano-convex lens 34

and a plano-concave lens 35 spaced apart by length d1. When the light is emitted from the ultraviolet source 31 through the lens system 32, the light emitted from the ultraviolet light source 31 appears as if the light is generated from a single converging point, as shown in Fig. 5. Here, the point where the light injected from the lens system 32 looks converged is sometimes referred to as a "converging point." Alternatively, the same point, from which the light injected from the lens system 32 is emitted is sometimes referred to an "emitting point."

Cont'd A4

Please replace the paragraph beginning on page 7, line 20 with the following rewritten paragraph:

A5

In the embodiment of the present invention, the light transmitted through the lens system 32 is incident on an optical fiber 37 after passing the amplitude mask 36 with a thickness of t_1. Accordingly, stripe patterns, referred to as gratings, of the amplitude mask 36 are formed along the length of the photosensitive optical fiber 37. An optical axis 38 represented by dotted lines in Fig. 3 represents a reference axis that is used to reference the major components of the present invention. Accordingly, all elements described in the preceding paragraphs have a rotational

cont'd A5

symmetry with respect to the optical axis 38.

Please replace the paragraph beginning on page 8, line 6 with the following rewritten paragraph:

A6

Fig. 4 is a perspective view of the amplitude mask 36 shown in Fig. 3. According to the present invention, the amplitude mask 36 includes a plurality of slits 41 arranged in a row with a uniform cycle period of $\wedge_M$ between each slit 41. The slit 41 has a width of $\wedge_M/2$, which is the same numerical unit as the distance between the slits 41. The amplitude mask 36 has a thickness of t_1, and the inner wall 42 constituting the slits 41 also has the thickness of t_1. Since the width of the slit 41 is relatively greater than the wavelength of the incident light, the light incident on the amplitude mask 36 typically transmits through the slits 41 without any refraction. Thereafter, the transmitted light via the amplitude mask 36 is incident along the optical fiber 37, as shown in Fig. 3, and then changes the refractive index along the length of the optical fiber 37. Accordingly, the periodic variations in refractive index formed on the optical fiber 37 serve as fiber gratings.

Please replace the paragraph beginning on page 8, line 18 with the following rewritten paragraph:

A7

Fig. 5 is a partial sectional view illustrating the process of forming the apodized optical fiber grating using the apparatus shown in Fig. 3. For simplicity, Fig. 5 illustrates a projected view of the light eliminated from the light source 31 starting from a plano-concave lens 35, which corresponds to the last element of the lens system 32 shown in Fig. 3. As described earlier, the light injected to the plano-concave lens 35 will behave as if the light is generated from an emitting point S, and the generated light is illuminated onto the amplitude mask 36 with the thickness of t_1. The amplitude mask 36 includes an incident surface 51, through which the light is incident, and an injecting surface 52, through which the light is being transmitted.

Please replace the paragraph beginning on page 10, line 1 with the following rewritten paragraph:

A8

According to the present invention, the method of fabricating apodized optical fiber using the amplitude mask 36 is initially set to have varying illuminated width along the optical fiber 37 at with variation cycle of $\wedge_{G1}$ between each grating formed on the fiber

Cont'd A8

37. Thereafter, the method further involves the following steps.

Please replace the paragraph beginning on page 10, line 6 with the following rewritten paragraph:

A9

First, after setting a specific width and regular cycle of the gratings formed along the optical fiber 37 as described above, the second step is directed to setting an optimal longitudinal ratio. Referring to Fig. 6, the longitudinal ratio represents the ratio of the distance between the converging (or emitting point) of the lens system 32 and the amplitude mask 36, to the distance between the converging (or emitting point) and the optical fiber 37. Fig. 6 is a side elevational view illustrating the process of adjusting the converging (or emitting point) of the lens system 32. As shown in FIG. 6, by adjusting the distance d_2 in the lens system 32, the light projected from the lens system 32 can be arranged to be parallel with the optical axis 38. In particular, the adjustment of the projected light is accomplishes by adjusting the distance between two lenses 34 and 35 of the optical field 32. In the first step, the distance between the two lenses 34 and 35 was d_1 as shown in Fig. 3, now

cont'd A9 that distance is adjusted to d_2 as shown in Fig. 6. However, the thickness of the amplitude mask 36 remained constant.

Please replace the paragraph beginning on page 11, line 6 with the following rewritten paragraph:

A10 For the purpose of clarity, Fig. 7 illustrates view starting from the plano-concave lens 35, which is the last element of the optical field 32 shown in Fig. 6. Unlike Fig. 5, the light projected through the plain-concave lens 35 has a uniform parallel projection onto the optical fiber 37 along the optical axis 38. As shown in Fig. 7, the inner walls 42 of the slits 41 are in parallel relationship with the optical axis 38 along the amplitude mask 36. Accordingly, any of the uniform light incident through the slit 41 is not blocked by the inner wall 42 of the respective slit 41 as the light pass through the amplitude mask 36. In particular, the width of the light projected through each slit 41 along the injecting surface 52 of the amplitude mask 36 does not become narrower even if some of the slits 41 is position distance from the optical axis 38 as in the first step. As a result, the widths of grating stripe patterns formed along the optical fiber 37 through the light projected through the amplitude mask 36 have identical

Cont'd A10

width, as shown in Fig. 7.

Please replace the paragraph beginning on page 11, line 19 with the following rewritten paragraph:

A11

It should be noted that the second step and third steps can be executed in any order in the present invention. Thus, it is not only possible to decide the cycle of the amplitude mask in the third step after setting the longitudinal ratio in the second step, but also it is also possible to adjust the distance between the converging (or emitting point) of the lens system and the amplitude mask as well as the distance between the converging (or emitting point) of the lens system and the optical fiber after setting the transverse ratio. Thus, if the distance between the amplitude mask 36 and the optical fiber 37 is fixed, the distance between the converging (or emitting point) of the lens field and the amplitude mask 36 can be adjusted to meet the target transverse ratio. Here, the lens system is composed of a cylindrical convex lens and a concave lens. Hence, the converging (or emitting point) can be adjusted by varying the distance between the cylindrical convex lens and the concave lens.